

**New Jersey Department of Environmental Protection
Division of Water Supply & Geoscience**

Water Main Break Guidance Manual

JUNE 2014

Please direct questions on this document to:

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INTRODUCTION

Recognizing that water distribution system pipe breaks, or water main breaks, are common emergencies encountered by water systems, the Division of Water Supply and Geoscience of the New Jersey Department of Environmental Protection (NJDEP) has developed this guidance document to:

- generally define types of water main breaks;
- clarify when notification to the NJDEP is required;
- clarify when a Boil Water Advisory should be issued for a water main break;
- establish the regulatory expectations regarding a sanitary repair;
- establish sampling procedures to assure potable drinking water quality following completion of the sanitary repair; and
- determine when to lift a Boil Water Advisory.

During a water main break event, it is of foremost importance to minimize the disruption of water supply to customers. In this regard, water distribution mains should be equipped with a sufficient number of valves to minimize service interruption during repairs. In addition, valves should be periodically exercised to ensure operability.

Water outages, as well as low water pressure, interfere with typical potable water uses (drinking, cooking, food preparation, etc.), and maintenance of sanitary conditions (bathing, hand washing, toilet flushing, etc.) within the home or business. In addition, the loss of positive pressure within a potable water pipe may allow disease-causing microorganisms from soil or groundwater surrounding the potable water pipe to be drawn into the pipe, and thus into contact with the potable water because of pressure differences. Lastly, during the process of repair, contamination of the potable water may occur if the interior of the drinking water pipes comes in direct contact with groundwater or soil.

To address these sanitary concerns, the New Jersey Safe Drinking Water Act regulations at N.J.A.C. 7:10-11.6(d) require that upon the completion of construction (includes repairs) all surfaces that come in contact with potable water shall be disinfected in accordance with the American Water Works Association standard for disinfection – AWWA C651-05, as amended and supplemented.

While water main breaks are unplanned events, the NJDEP does not consider all water main breaks to be reportable incidents. Section I of this guidance document provides clarification of which events need to be reported, consistent with the New Jersey Safe Drinking Water Act regulations. Should a Boil Water Advisory be needed for a water main break event, Section II describes how to issue the Boil Water Advisory to comply with State and Federal requirements. Section III describes disinfection procedures, Section IV describes water quality testing, and Section V describes lifting the Boil Water Advisory.

To appropriately address water main breaks, each community water system is encouraged to develop a Water Main Break Action Plan, so that affected parties know their roles and responsibilities during an event. In addition, community water systems should maintain a “Water Main Break Log” which provides incident details such as the occurrence date of water main break, remedial actions taken, and water quality results; this log should also include those water main break events that do not result in boil water advisories. Refer to Appendix E for guidelines regarding the contents of a Water Main Break Action Plan and Water Main Break Log.

This document generally applies to community water systems as the vast majority of non-community water systems do not have distribution systems for the delivery of drinking water and would not experience the types of events described herein. However, the guidance and materials presented may be used by non-community water systems as appropriate.

Any uncertainty regarding these guidelines and the applicability to a specific incident should be reviewed with staff from the Bureau of Water System Engineering (BWSE), Water System Assistance & Security Section in a timely manner (within six (6) hours of occurrence) by contacting (609) 292-2957. Outside of normal business hours, you should contact the NJDEP Hotline (1-877-927-6337) to report your incident and request immediate consultation.

SECTION I

Types of Water Main Breaks and Water Outages

This guidance document recognizes three (3) distinct types of water outages caused by water main breaks: Uncontrolled Outage, Controlled Outage, and Low Pressure Event. This section addresses these three types of water main breaks and expectations involving notification requirements to the NJDEP, applicability of issuing a Boil Water Advisory or Water Main Break Advisory, sanitary repair procedures, water quality sampling, and return to service procedures (normal operating conditions).

The NJDEP recognizes that there is standardized industry nomenclature for describing water main breaks (Type 1, Type 2, etc.) However, due to the concerns of misrepresenting a water main break event by solely using a reference to a type number, the NJDEP expects water systems to report, when applicable, and maintain their log of incidents by providing the description of the service impact from the main break, such as Uncontrolled Outage, Controlled Outage, or Low Pressure Event. These scenarios and corresponding expectations are detailed below.

- 1) Uncontrolled Outage:** An uncontrolled water outage from a water main break is the loss of positive water pressure in the entire drinking water distribution system, or portions of the service area, at street level before implementation of corrective action, and/or the loss of positive pressure which results in intermittent water service, regardless of the size of the water main and number of service connections affected.

General requirements include:

- i. The water system is required to notify the NJDEP within 6 hours of the occurrence of the incident by contacting the NJDEP Hotline at 1-877-927-6337 (WARN DEP) and the Bureau of Water System Engineering (BWSE) at (609) 292-2957 during business hours. Outside normal business hours a water system should contact the NJDEP Hotline at and ask for consultation with a NJDEP Enforcement Duty Officer.

A detailed incident report must be prepared using the ***Water Supply Emergency Incident Report*** and sent via email to wsemergency@dep.nj.gov.

Refer to Appendix A for copies all reporting forms referenced in this document or visit the NJDEP website at: http://www.nj.gov/dep/watersupply/dws_security.html to view the Water Supply Emergency Incident Report on-line.

- ii. The water system is required to issue a Boil Water Advisory to the impacted population (refer to Section II for complete instructions), as soon as possible based on the severity of the incident but in no case later than 24 hours after learning of the incident in accordance with the delivery requirements specified for a Tier 1 public notice [40 CFR 141.201 et seq.] Refer to Appendix B for summary overview of the Federal Public Notification Rule.

A **Boil Water Advisory** template and the required **Tier 1 Public Notification Certification Form** are provided in Appendix A. A copy of the completed forms must be submitted via mail to the NJDEP within ten (10) calendar days of issuing the Boil Water Advisory or by using the NJDEP's dedicated water supply emergency email at wsemergency@dep.nj.gov unless otherwise specified.

- iii. Following the repairs to the water main(s), chlorination and de-chlorination procedures must be followed in accordance with AWWA Standard C651-05, as discussed in Section III and Appendix C.
- iv. Water quality testing (total coliform & chlorine residual) is necessary to verify the effectiveness of the sanitary repair, and to lift the Boil Water Advisory; the number of samples required depends on the extent of the water outage and based on the population affected. Water quality testing and results are discussed in Section IV.
- v. Following the receipt of satisfactory results, the water system is required to notify affected customers of appropriate measures to take prior to resuming normal water usage. A Boil Water Advisory can be lifted by the affected water system by following procedures addressed in Section V of this document. Refer to Appendix A for a **Boil Water Advisory Lift Notice** template.

Although the steps outlined above for an Uncontrolled Outage only indicate the filing of a **Water Supply Emergency Incident Report** at the onset of the incident, subsequent status reports, via email or phone call, will be necessary to address updates on repairs/extent of service interruption, completion of appropriate remedial measures, and the lifting of a Boil Water Advisory.

2) Controlled Outage: A controlled water outage from a water main break is the partial loss of water pressure (positive pressure is maintained) within the system or portions of the system, that requires that a section of water main to be isolated and wholly or partially dewatered to facilitate the repair. The water outage in this scenario is due to implementation of corrective actions and not directly caused by the water main break.

General requirements include:

- i. The water system is not required to notify the NJDEP provided sanitary repairs are performed in accordance with AWWA Standard C651-05 as noted in item iv below.
- ii. A water system following AWWA Standard C651-05, for this scenario is not required to issue a Boil Water Advisory but is expected to inform customers affected by the repair to keep them informed and provide guidance regarding appropriate measures to take upon restoring water service. Refer to Appendix A for an example of a **Water Main Break/Water Service Restored** notification template.

Although the issuance of a "Boil Water Advisory" is not required in this scenario, a water system may elect to issue a precautionary Boil Water Advisory due to site-specific sanitary concerns or other issues. If issued the water system must notify NJDEP and submit a Water Supply Emergency Incident Report consistent with item 1(i.) above.

- iii. A Boil Water Advisory is required if temporary water service is provided during the water main repair through the use of overland lines (hydrant-to-hydrant connections) via a hose that is not dedicated for potable-use only, is not NSF 61 compliant, and/or is not properly disinfected and flushed prior to use. In addition, concerns of water quality and the issuance of a Boil Water Advisory may be necessary if temporary water service is provided from an unapproved water source and/or water tanker.
- iv. Following the repairs to the affected water main(s), chlorination and de-chlorination procedures must be followed in accordance with AWWA Standard C651-05, as described in Section III, and Appendix C.
- v. Water quality testing (total coliform & chlorine residual) is necessary to verify the effectiveness of the sanitary repair; the number of samples required depends on the extent of the water outage and based on the population affected. Water quality testing and results are discussed in detail in Section IV.
- vi. The water system is not required to notify NJDEP of water quality test results unless any water sample(s) tests total coliform-positive. If notification is required during non-working hours, contact the NJDEP Hotline and be sure to request immediate consultation as part of your event description.

3) Low Pressure Event: (positive pressure is maintained in the water main during repair): Low pressure in a water main can occur when there is a water main break that can be repaired in-service (under pressure) using full circle clamps, sleeves, etc. As long as the water main is pressurized and water is observed to flow continuously from the rupture, it is unlikely that the water main has become contaminated.

Under this scenario the water system is **not required** to:

- i. Notify the NJDEP.
- ii. Issue a Boil Water Advisory.
- iii. Notify customers, as positive pressure has not been lost.
- iv. Conduct total coliform sampling as it is unlikely that the water main has become contaminated.

SECTION II

Issuing a Boil Water Advisory In Response to a Water Main Break

A Boil Water Advisory is a timely public notification issued by a water system which advises customers to boil drinking water before use due to an event that has a significant potential to cause serious adverse health effects. Boiling kills disease-causing microorganisms that may cause diarrhea, nausea and/or stomach cramps and is the surest method to ensure water is bacteriologically safe to drink.

A Boil Water Advisory is required when there is a failure or significant interruption in the treatment or delivery of potable water. Other types of water use advisories, such as Do Not Drink, and Do Not Use advisories may be appropriate for main breaks or other infrastructure impacts that compromise (or have the potential to compromise) water service or water quality. The USEPA, along with other organizations have prepared the “Drinking Water Advisory Communication Toolbox” that focuses on water systems and addresses the range of situations that generate drinking water advisories, and provides information on how to plan for, develop, implement, and evaluate drinking water advisories. Refer to Appendix F for an overview of this document and website address for online access.

The water system and/or health departments have the authority to issue a “Boil Water Advisory” based on the severity of the event and to ensure timely notification to affected customers. Such decisions by these entities are encouraged. Nonetheless, the water system is required to notify the NJDEP of incidents affecting water quality and the issuance of the Boil Water Advisory. Subsequent lifting of the Boil Water Advisory only requires NJDEP approval if the water system is subject to a NJDEP issued Boil Water Notification Order.

Community water systems are required to follow the Federal Safe Drinking Water Act regulations (40 CFR 141.201 et seq.) for a Tier 1 public notification and issue a Boil Water Advisory in a timely (within 24 hours) and effective manner based on the severity of the incident. Appendix A provides a Boil Water Advisory template that can be used to inform residents affected by a water main break or other water service interruption.

The affected community water system is responsible for the delivery of the Boil Water Advisory to customers by employing the most effective means to expeditiously reach its customers. Methods of delivery include: telephone notification systems, such as reverse 911, TV/radio broadcasts, door-to-door hand delivery of written notices, mobile broadcasts (sound truck), etc.

Water systems, as part of their system-specific emergency response plan, are tasked with identifying their sensitive/critical customers (i.e. hospitals, nursing homes, assisted living facilities, dialysis centers, surgical centers, schools, colleges, daycare facilities, etc.) and are encouraged to communicate the water quality/water supply issue to the affected users within an hour of a water system’s awareness of any incident that may tend to lessen the quality or pressure of delivered water. However, in no case should notification exceed the 24 hours prescribed by Tier 1 public notice requirements.

In addition, the water system should provide direct notification to affected stakeholders, such as local police, fire, public works, health departments, school boards, and mayor and council of the affected municipality(s) and appropriate county health department(s), and office(s) of emergency management, as applicable, as soon as practical, but at least within six-hours of a water system's awareness of the incident.

Water systems as part of their initial notification procedures are encouraged to provide notification of the emergency incident to affected stakeholders, which include local and county health departments (Refer to Appendix D for county health agency contacts).

The county health department through their Local Information Network and Communication System (LINCS) Unit coordinate with the NJ Department of Health (NJDOH) to inform regulated Health Care facilities in the impacted service area. County and local health departments have listings of these facilities within their geographic purview. To support this effort, the NJDEP includes the county health department, NJLINCS, and the NJDOH in Situational Awareness communications involving water supply emergencies. The county health departments also have oversight of restaurants and retail food establishments and coordinate with these facilities regarding the implications of a water use advisory, such as a Boil Water Advisory. The practice of sharing water supply emergency information with the NJDOH ensures sufficient redundancy to promote situational awareness for State and County Health departments and coordinated response activities.

NJDEP – Boil Water Notification Order

To compel the issuance of a Boil Water Advisory and the implementation of appropriate corrective actions utilizing the system's resources or the resources of a contracted third party, the NJDEP may issue a Boil Water Notification Order (Order) to the affected community water system. It is the intent of the NJDEP to reserve this action for water systems that are recalcitrant, unresponsive, or demonstrate a lack of technical ability to implement appropriate corrective actions.

The issuance of an Order may also be necessary due to inappropriate/ineffective corrective actions, such as the use of an improperly sanitized water tanker, the use of non-NSF compliant overland lines, or the use of overland lines that are not dedicated for potable water service to provide temporary water service. Also, an Order may be issued due to unsatisfactory results (*E.coli* positive) of water quality sampling which indicate that the sanitary repair procedures were ineffective and microbiological contamination exists. **In any scenario that the issuance of a Boil Water Advisory is compelled by a NJDEP issued Boil Water Notification Order, the NJDEP's approval is required prior to lifting the advisory.**

SECTION III

Disinfection Procedures for a Repaired or Replaced Water Main

Any water main shut down and depressurized during repair may allow contamination to enter the potable water distribution system by cross-connection contamination, ground water seepage, animals, dirt, etc. Appropriate procedures for the sanitary repair, disinfection and flushing of the water main must be followed in accordance with AWWA Standard C651-05.

Refer to Appendix C for excerpts of AWWA C651-05 disinfection procedures.

Cross-connection hazards include back-siphonage and back-pressure. For example, back-siphonage, a drop in pressure on the potable side, occurs when a connection is made between the potable water and non-potable water, i.e., when a garden hose submerged in a pool or pond draws non-potable water into the distribution because of a pressure drop. Back-pressure, an increase in pressure on the contamination side, results in contamination when non-potable water exerts pressure on a pipe, i.e. a leaking large diameter sewer main located in the area of the water main break.

N.J.A.C. 7:10-11.6(d) requires that upon the completion of construction (includes repairs as stated above) all surfaces that come in contact with potable water shall be disinfected in accordance with the American Water Works Association standard for disinfection – AWWA C651-05, as amended and supplemented.

In any instance where the repair of the water main has to be isolated and wholly or partially dewatered to repair it, the water main must be disinfected before being placed back into service in accordance with N.J.A.C. 7:10-11.6(d).

Water main leaks or breaks repaired in-service with clamping devices (or other devices), while the water main remains pressurized, present little danger of contamination and do not require disinfection.

De-chlorination of highly chlorinated waters is required prior to the discharge to either sanitary or storm sewers or any surface or ground waters. Refer to Appendix C for guidance on appropriate methods of de-chlorination of highly chlorinated waters.

SECTION IV

Water Quality Testing

Water quality testing is an essential component of the sanitary repair and must be performed to ensure the effectiveness of the disinfection procedures.

In general, sampling should be performed at consumer taps to determine the effectiveness of the sanitary repair and the quality of delivered water.

When there is a loss of positive pressure due to a water main break or the implementation of corrective action (uncontrolled or controlled outage), the minimum number of samples to be collected and analyzed for total coliform is based on the number of persons affected. The number of samples is specified in the chart below:

<u>Population served in the area affected by the water main break</u>	<u>Minimum # of Samples</u>
25-1000	3
1001-2000	4
2001-3000	5
3001-4000	6
4001-7000	7
7001-10,000	8
10,001-50,000	9
50,001-130,000	10
> 130,000	10% of Required Monthly TCR Samples

For water main breaks which affect less than 25 persons, at least one sample should be collected downstream of the repair, or one sample from each end of the repaired break if flow direction is uncertain/unknown. Chlorine residuals must be analyzed at the same locations in the distribution system where total coliforms were sampled.

Total coliform samples must be analyzed by a New Jersey certified drinking water laboratory. If any samples are positive for the presence of total coliform bacteria, the laboratory must analyze the samples for fecal coliform or *E. coli*.

The water system shall notify the NJDEP within six (6) hours, in accordance with N.J.A.C. 7:10-2.4(b), of receiving water quality results that are positive for the presence of total coliform bacteria following the sanitary repair, disinfection, and flushing of the water main if:

- One or more results are positive, if 10 samples or less are collected.
- More than one result is positive for a small or medium sized system (defined as serving less than or equal to 10,000 persons) which has collected more than 10 samples.
- The percentage of positive sample results exceeds the "normal" monthly average of positive samples reported by the system, based upon the preceding two years of monthly bacteriological reports submitted for a water supply serving a population greater than 130,000 persons.

The water system must consult with the NJDEP on additional remedial action. Samples testing *E. Coli* positive will likely necessitate the issuance of a Boil Water Advisory, if not already in effect.

If water service is restored to the affected customers before the results of water quality testing are available, the delivery of that water should be limited to those customers initially affected by the water main break through the use of valves and not delivered to unaffected portions of the distribution system.

SECTION V

Lifting a Boil Water Advisory

A Boil Water Advisory can be lifted by the affected water system when the following three events have been completed:

- i. Implementation and completion of remedial measures (repair, disinfection, and flushing of the water main),
- ii. Resuming normal operating conditions, such as discontinuing provisions for alternate water, involving the use of emergency interconnections, hydrant-to-hydrant connections, bulk water delivery, etc., and
- iii. Receipt of satisfactory water quality results (performed to ensure the effectiveness of the sanitary repair):
 - 1) If 10 samples or less are collected, all sample results must be total coliform-negative to lift the Boil Water Advisory. If small or medium sized systems (serving less than or equal to 10,000 persons, as defined in N.J.A.C. 7:10-3.6(e)) opt to collect more than 10 samples, no more than one sample may be total coliform-positive to lift the Boil Water Advisory.
 - 2) To lift a system-wide Boil Water Advisory for a water supply serving a population greater than 130,000 persons, the allowable percentage of positive sample results should be no more than the "normal" monthly average of positive samples reported by the system, based upon the preceding two years of monthly bacteriological reports submitted.
 - 3) Minimum chlorine residual of 0.2 mg/L or normal operating residuals if less than 0.2 mg/L for systems practicing disinfection using chlorine.
 - 4) For small community water systems (< 100 dwellings) that do not disinfect their water supply in accordance with N.J.A.C. 7:10-4.1(b), the water quality samples collected following implementation of corrective actions should be absent of any detectable chlorine residual.

A template for lifting a Boil Water Advisory is presented in Appendix A.

Notify the NJDEP when the Boil Water Advisory is lifted via email at wsemergency@dep.nj.gov

APPENDIX A

FORMS COMMONLY USED DURING A WATER MAIN BREAK

WATER SUPPLY EMERGENCY INCIDENT FORM
www.nj.gov/dep/watersupply/pdf/ws-eir.pdf

BOIL WATER ADVISORY TEMPLATE

PUBLIC NOTIFICATION CERTIFICATION FORM

BOIL WATER ADVISORY LIFT NOTICE

WATER MAIN BREAK/WATER SERVICE RESTORED

**New Jersey Department of Environmental Protection
Division of Water Supply & Geoscience**

Water Supply Emergency Incident Report

INSTRUCTIONS: For water supply emergencies involving loss of pressure or quality, the supplier of water shall:

- 1) within 6 hours of the occurrence notify NJDEP Hotline 1-877-927-6337 (WARN DEP) for documentation and tracking of the incident;
- 2) inform the Bureau of Water System Engineering (BWSE) at (609) 292-2957 during business hours; and
- 3) submit this completed report form to the Division's general email address at wsemergency@dep.nj.gov unless otherwise specified.

Date Of Report: _____

Initial Report [☐] **Updated Report** [☐]

General Information:

System Name:	PWSID #: NJ
NJDEP Hotline Assigned Tracking Number:	
Point of Contact:	Title:
Cell Phone:	Work Phone:
Fax Number:	Email:

Incident Description:

Date of Incident:	Time of Awareness:
Incident Type: Water main break[<input type="checkbox"/>] Damage due to construction[<input type="checkbox"/>] Explosion[<input type="checkbox"/>] Storm event[<input type="checkbox"/>] Power outage[<input type="checkbox"/>] Flood[<input type="checkbox"/>] Contamination[<input type="checkbox"/>] Treatment malfunction[<input type="checkbox"/>] Other/unknown (Specify)[<input type="checkbox"/>]	
Brief Description:	
County(s) Impacted:	
Municipality(s) Impacted:	
Service Connections Impacted:	
Total Population Impacted:	
Water System Area Impacted: Provide northern, southern, western, and eastern street boundaries impacted by the incident; a map depicting the affected area should also be included.	
Is the incident thought to be intentional? Yes [<input type="checkbox"/>] No [<input type="checkbox"/>]	
If Yes , is the area of the incident now being handled as a crime scene by law enforcement? Yes [<input type="checkbox"/>] No [<input type="checkbox"/>]	
If Yes , has the incident been reported to the Suspicious Activity call center (866-472-3365)? Yes [<input type="checkbox"/>] No [<input type="checkbox"/>]	

Incident Description (Continued):

Are any consecutive (i.e. interconnected) water systems affected or impacted? If Yes provide system name(s):	Yes [] No []
Are any Healthcare critical facilities or other sensitive populations affected? If Yes indicate all affected: Schools [] Daycare facilities [] Hospitals [] Surgical centers [] Endoscopy suites [] Nursing homes [] Assisted living facilities [] Dialysis centers []	Yes [] No []
Does the damage or loss of facilities affect critical activities for other Sectors? If Yes, identify all sectors, activities, and/or entities adversely affected: Agriculture/Food [] Financial services [] Emergency services [] Federal/State Governance [] Other (specify) []	Yes [] No [] Not Determined []
Is there extensive damage to a critical facility and/or is there damage to a large portion of your system's infrastructure/facilities (i.e. hurricane damage)? If Yes please complete the Water Supply Damage Assessment Report (http://www.nj.gov/dep/watersupply/doc/ws-dar.docx)	Yes [] No []

Response Actions:

Has the appropriate water use advisory been issued? If Yes , type of advisory issued: Boil Water [] Do Not Drink [] Do Not Use [] If Yes , delivery methods used (check all that apply): Telephone notification [] Reverse 911 [] TV/Radio broadcasts [] Hand delivery (door-to-door) [] Sound truck [] Other (specify) []	Yes [] No []
Other notifications made: Local police [] Fire [] Public works [] School districts [] Mayors of affected towns [] Local health department(s) [] County health department(s) [] Offices of Emergency Management [] Critical/sensitive populations []	
Are provisions for alternate water supply being established? If Yes check all that apply: Interconnections with other community water systems [] Bottled water [] Water tanker [] Temporary overland hydrant to hydrant connections [] Other (specify) []	Yes [] No [] N/A []

Recovery Status

Describe current status of repairs/replacement, etc. being implemented: (Subsequent status reports may expand on the corrective actions implemented.)	
Estimated date/time for repairs and restoration of normal service:	
Was disinfection, flushing and sampling of the repaired infrastructure performed in accordance with the appropriate American Water Works Association (AWWA) standards?	Yes [] No []
Attach the results of any water samples collected to verify sanitary repairs restoration of water quality	

BOIL WATER ADVISORY

BOIL YOUR WATER BEFORE USING

FOR CUSTOMERS OF _____
(Water system name) (PWSID #)

_____ is providing notification that a water main
(Water system name)

break has occurred at _____
(street and cross street, municipality)

which has caused customers within our service area to (Select applicable phrase: *be without water* **or** *experience a significant loss of pressure*). A potential or actual threat to the quality of water being provided to you currently exists. As a precaution, we are implementing a (Select applicable phrase: *system wide* **or** *limited* Boil Water Advisory until testing of the water supply is deemed satisfactory.

What should I do? What does this mean?

Effective immediately and until further notice, customers within the impacted service area _____ are instructed to bring tap water to a rolling boil for one minute and allow the tap water to cool before using, or use bottled water. Boiled or bottled water should be used for drinking; preparing foods; mixing baby formula, food, juices or drinks; washing vegetables and fruit; cooking; making ice; brushing teeth; and washing dishes until further notice. Boiling kills bacteria and other organisms in the water.

The following measures are also recommended:

- Throw away uncooked food or beverages or ice cubes made with tap water during the day of the advisory;
- Keep boiled water in the refrigerator for drinking;
- Do not swallow water while showering or bathing;
- Rinse hand-washed dishes with a diluted bleach solution (one tablespoon of household bleach per gallon of tap water) or clean your dishes in a dishwasher using the hot wash cycle and dry cycle;
- Do not use home filtering devices in place of boiling or using bottled water; most home water filters will not provide adequate protection from microorganisms;
- Use only boiled water to treat minor injuries;
- Provide pets with drinking water that has been boiled (and cooled).

Please continue to boil your water or use bottled water until you are notified that the water quality is satisfactory. This advisory will remain in effect until repairs are completed and testing shows the water quality to be safe.

We are working as quickly as possible to restore your water quality. Thank you for your patience. If customers have any questions please contact:

_____ at (____) _____
Name Phone

You may also view our web site at _____ for further updates.



Department of Environmental Protection – Division of Water Supply & Geoscience
Bureau of Safe Drinking Water
Mail Code 401-04Q - P.O. Box 420
Trenton, New Jersey 08625-0420
Tel # 609-292-5550 – Fax #609-292-1654

Office Use Only

Reviewed by:

Date:

Public Notification Certification Form – Tiers 1, 2 & 3

Requirements Pursuant to 40 CFR 141, Subpart Q and N.J.A.C. 7:10

****This form and a copy of your Notice to the Public must be submitted to the State within 10 days of notifying your customers. ****

PWSID#: _____ Water System Name: _____

Violation #: _____ Violation or Situation Date: _____

Individual Contaminant or Contaminant Group: Total coliform Monitoring Period: _____

Violation or Situation Type: (Check appropriate box) ☐ MCL ☐ Treatment Technique ☒ Water Main Break

☐ MRDL ☐ E. coli Positive Source Water Sample ☐ Monitoring and Reporting ☐ Other: _____

Violation or Situation Public Notification Tier: (Check appropriate box) ☒ Tier 1 ☐ Tier 2 ☐ Tier 3

Please check all that apply and provide information as indicated below:

1. ☐ Consulted with DEP within 24 hours (Tier 1) or 48 hours (Tiers 2 & 3) Date: _____
2. ☐ Distributed the notice by the following method(s), and on the following date(s) in accordance with 40 CFR 141.201 et seq:
 - ☐ Reverse 911 Date: _____
 - ☐ Continuously Post Date: _____
 - ☐ Separate Mailing to Customers Date: _____
 - ☐ Hand Deliver Notice to Customers Date: _____
 - ☐ Publish Notice in Newspaper Date: _____
 - ☐ Release Notice to and Announced by Broadcast Media Date: _____
 - ☐ Post Notice on System Website Date: _____
 - ☐ Billing Date: _____
 - ☐ Annual Report (Consumer Confidence Report) Date: _____
 - ☐ Other: _____ Date: _____

Note: Non-community water systems that serve a school, preschool or daycare must also hand deliver the notice to a parent or legal guardian of each child for Tier 1, 2 and 3 violations and situations. For more information reference EPA's Public Notification Handbook at: <http://www.epa.gov/safewater/publicnotification/compliancehelp.html>

3. ☐ **Content – 10 Required Elements Checklist:** 40 CFR 141 Subpart Q (Ensure all items are included in the notice)
 - ☐ Description of violation or situation including contaminant and contaminant levels as appropriate
 - ☐ Date violation or situation occurred.
 - ☐ Potential adverse health risks, using mandatory language provided in the rule.
 - ☐ Required language for Monitoring and Reporting Violations, provided in the rule
 - ☐ The population at risk, including sub-populations particularly vulnerable if exposed.
 - ☐ Whether alternate water supply should be used.
 - ☐ What action consumers should take, including when to seek medical help, if known.
 - ☐ What the system is doing to correct the violation or situation.
 - ☐ When the system expects to return to compliance or resolve the situation.
 - ☐ Contact information: Owner name, business address, and phone number of the water system owner, operator or designee that can provide additional information concerning the notice.
 - ☐ A statement encouraging recipients to distribute the notice to other persons served, using standard language from the rule.
4. ☐ **Attach a copy of the posted Public Notice(s) to this certification form.**

The public water system named above hereby certifies that public notification has been provided to its consumers in accordance with all delivery, content, and format requirements specified in 40 CFR Part 141 and N.J.A.C 7:10.

Owner/Operator: _____
(circle one) (Signature) (Print Name) (Phone Number)

Date of Certification: _____ Operator License # (if applicable) _____

BOIL WATER ADVISORY LIFT NOTICE

FOR CUSTOMERS OF _____, _____
(Water system name) (PWSID #)

Customers of _____ were notified on ____ / ____ / ____ of
(Water system name) (Date)
a possible problem with the drinking water due to a water main break, and were advised to boil the tap water before using as a precautionary measure. We are pleased to report that the repairs have been completed and subsequent water quality testing shows the water quality to be safe.

THE BOIL WATER ADVISORY IS LIFTED and it is no longer necessary to boil your water before using. The following measures are strongly encouraged at this time:

- Run your water faucets for 3-5 minutes to flush your service connection and interior plumbing with water from the service main.
- Empty and clean your automatic ice makers and water chillers.
- Drain and refill your hot water heater if the temperature is set below 113 degrees Fahrenheit.
- Service connections with a water softener/cartridge filters should be run through a regeneration cycle or other procedures recommended by the manufacturer.
- Water reservoirs in tall buildings should be drained and refilled (as applicable).

We apologize for any inconvenience and thank you for your patience. If you have any questions or comments, please contact:

Name () Phone

You may also visit our web site at _____ for further information.

WATER MAIN BREAK NOTIFICATION

Water Service Restored

Customers of _____ experienced a water service
(Water System Name)

interruption on ____ / ____ / ____ due to a water main break.

We are pleased to report the repairs have been completed.*

The following measures are strongly encouraged at this time:

- Run your water faucets for 3-5 minutes to flush your service connection and interior plumbing with water from the service main.
- Empty and clean your automatic ice makers and water chillers.
- Drain and refill your hot water heater if the temperature is set below 113 degrees Fahrenheit.
- Service connections with a water softener/cartridge filters should be run through a regeneration cycle or other procedures recommended by the manufacturer.
- Water reservoirs in tall buildings should be drained and refilled. (as applicable)

We apologize for any inconvenience and thank you for your patience. If you have any questions or comments, please contact:

Name (_____) Phone

**Optional Text (if water quality results are available prior to restoring water service): and subsequent water samples show the water quality to be satisfactory.*

APPENDIX B

OVERVIEW OF THE FEDERAL SAFE DRINKING WATER ACT PUBLIC NOTIFICATION RULE

<http://water.epa.gov/lawsregs/rulesregs/sdwa/publicnotification/upload/fsfinaldwpnregulations.pdf>

Full text can be found at the following website:

<http://www.ecfr.gov/cgi-bin/text-idx?SID=12733702c53ede2bd27559ca8ae7e341&node=40:24.0.1.1.3.16&rgn=div6>

A copy of the Revised Public Notification Handbook can be found at:

<http://water.epa.gov/lawsregs/rulesregs/sdwa/publicnotification/upload/PNrevisedPNHandbookMarch2010.pdf>

Final Drinking Water Public Notification Regulations

What is public notification?

Public notification is intended to ensure that consumers will always know if there is a problem with their drinking water. Public water systems must notify the people who drink their water if the level of a contaminant in the water exceeds Environmental Protection Agency (EPA) and State drinking water regulations, if there is a waterborne disease outbreak or any other situation that may pose a risk to public health, if the water system fails to test its water as required, or if the system has a variance or exemption from the regulations. Depending on the severity of the situation, water suppliers have from 24 hours to one year to notify their customers. EPA sets strict requirements on the *form, manner, content, and frequency* of public notices. Public notification is provided in addition to the annual water quality report (consumer confidence report, or CCR), which provides customers with a more complete picture of drinking water quality and system operations. The annual CCR tells consumers what's in their water, where it comes from, and where they can obtain additional information.

In fiscal year 1998, there were more than 124,000 violations of drinking water regulations requiring a public notice, involving over 25 percent of the 170,000 public water systems. Over 90 percent of the violations were for failure to fully meet the monitoring or testing procedure requirements. Fewer than 1.5 percent of the violations posed an immediate risk of adverse health effects from short-term exposure.

What action is EPA taking?

EPA published final regulations in the Federal Register on May 4, 2000 (65 FR 25981) to revise the general public notification regulations. The revised regulations require faster notice in emergencies and fewer notices overall, and will result in notices that better communicate the potential health risks from drinking water violations and how to avoid such risks. The new rule will enable water systems to better target notices to the seriousness of the risk and make the existing notification process less burdensome for water suppliers and make notices easier to read for consumers.

The revised regulations (under 40 CFR Part 141, subpart Q) are effective on June 5, 2000. However, they do not apply to public water systems in States with approved primacy programs until May 6, 2002, unless a primacy State chooses to adopt the new requirements earlier. Public water systems where EPA directly implements the drinking water program (i.e., Wyoming, Washington, D.C., and Tribal lands) must start complying with the new regulations on October 31, 2000. EPA proposed the public notification rule revisions on May 13, 1999 (64 FR 25963).

What changes were made to the public notification requirements?

24-hour notice. Water systems are required to distribute Tier 1 notices in 24 hours (instead of 72) for violations posing acute health risks due to short-term exposure. The number of violations and situations requiring a Tier 1 notice were significantly expanded from the previous rule.

Consultation requirement. Water systems must consult with the State or EPA within 24 hours of a Tier 1 violation to receive direction on subsequent requirements.

30-day notice for other serious violations. The notice deadline for violations of maximum contaminant levels or treatment techniques which do not pose an immediate threat to human health is extended from 14 days to 30 days, with possible extension to 3 months (Tier 2).

12-month notice for non-serious violations. The notice deadline for all other violations is extended from 3 months to 12 months, allowing a single annual report where applicable (Tier 3). Systems may choose to include this notice in their annual consumer confidence report.

Simplified standard language. The existing standard health effects language is simplified, consistent with the consumer confidence report (CCR) requirements. New standard language is now required for monitoring violations. Recipients of public notices are also encouraged, through standard distribution language in notices, to further distribute the notices to people who may not receive a notice (such as tenants or hospital patients).

Streamlined distribution of notices. Under the previous rule, water systems were required to use specific *multiple* delivery methods when distributing notices. The revised rule requires water systems to select a *single* minimum method for each tier from a regulatory list and to take additional steps of their own choosing that are reasonably calculated to reach all the other persons served. The minimum required methods of delivery listed in the revised regulation include the media, hand delivery, or posting for tier 1 notices, and direct mail, hand delivery, or posting for Tier 2 and Tier 3 notices.

Certification of Compliance. The revised rule requires a water system to certify to the State or primacy agency within 10 days that it has met all public notice requirements. The previous rule required only that a copy of the notices be sent to the State.

How does the final regulation work?

The final regulation divides public notice into three tiers:

Tier 1, for violations and situations with significant potential to have serious adverse effects on human health as a result of short-term exposure. Notice is required within 24 hours of the violation.

Tier 2, for other violations and situations with potential to have serious, but not immediate, adverse effects on human health. Notice is required within 30 days, or as soon as possible, with extension of up to three months for resolved violations at the discretion of the State or primacy agency.

Tier 3, for all other violations and situations not included in Tier 1 and Tier 2. Notice is required within 12 months of the violation, and may be part of a single annual report, including in some cases the annual CCR already required by EPA.

What types of violations and situations are covered under each tier?

The final regulation contains an Appendix listing out every violation and situation requiring a public notice and its tier. The requirements for the timing of the public notice and the form and manner of its delivery are determined by the tier to which the violation or situation is assigned. For example, a total coliform violation where fecal coliform is present falls under Tier 1, which requires notification delivery within 24 hours by (at a minimum) appropriate broadcast media, posting, or hand delivery.

What are EPA requirements for the form, manner, and content of the public notices?

The final rule sets minimum methods of delivery under each tier, but also requires that water systems take steps reasonably calculated to reach others not reached by the minimum method. Each notice must contain information addressing ten elements, including use of standard health effects language for maximum contaminant level (MCL) and treatment technique violations and standard language for monitoring violations. Public water systems serving a large proportion of non-English speaking consumers are also required to include information in the notice in languages other than English.

New Implementation Requirements

Which public water systems are affected by the regulation?

Once the rule goes into effect in each State, it will require all the public water systems to make changes to their current public notification programs to incorporate the revised regulations. The final rule will require States with primary enforcement authority to revise their approved primacy programs to adopt regulations no less stringent than the revised EPA regulations. The final regulation gives States considerable discretion, at their option, to work with EPA to tailor public notification programs to fit unique needs, policies, and programs.

How is EPA helping public water systems with new requirements?

EPA and the Association of State Drinking Water Administrators (ASDWA) are issuing a *Public Notification Handbook* to assist water systems in implementing the revised regulation. This *Handbook* provides templates for notices and other aids to help water systems develop notices for violation situations.

Tier 1 Public Notice - Required Within 24 Hours

- Fecal coliform maximum contaminant level (MCL) violation or failure to test for fecal contamination after total coliform test is positive
- Nitrate/nitrite/combined nitrate and nitrite MCL violation or failure to take confirmation sample
- Chlorine dioxide maximum residual distribution level (MRDL) violation in distribution system or failure to take repeat samples in distribution system
- Exceedance of maximum allowable turbidity level resulting in an MCL or treatment technique (TT) violation, when the State or EPA determines a Tier 1 notice is warranted
- Special public notice for non-community water systems with nitrate exceedances between 10 mg/l and 20 mg/l, when allowed to exceed MCL (10 mg/l) by the State
- Waterborne disease outbreak or other waterborne emergency
- Other situations as determined by the primacy agency

Tier 2 Public Notice - Required Within 30 Days (unless extended to 90 days by State)

- All other MCL, MRDL, and TT violations not identified as a Tier 1 notice
- Monitoring and testing procedure violations, when the primacy agency requires a Tier 2 (rather than Tier 3) notice
- Failure to comply with variance and exemption (V&E) conditions

Tier 3 Public Notice - Required Within 1 Year

- All other monitoring or testing procedure violations not already requiring a Tier 1 or Tier 2 notice
- Operation under a V & E
- Special public notices (i.e., exceedance of the fluoride secondary maximum contaminant level (SMCL); announcing the availability of unregulated contaminant monitoring results)

EPA 816-F-00-020

May 2000

APPENDIX C

DISINFECTION AND DE-CHLORINATION PROCEDURES

Disinfection¹ and De-chlorination Procedures

Disinfection Procedures

Excerpts from AWWA Standard C651-05, Section 4.7 - Disinfection Procedures when cutting into or repairing existing mains include the following:

- 1) Swabbing with Hypochlorite solution – the interior of pipe and fittings used in making the repair shall be swabbed or sprayed with a 1 percent hypochlorite solution before installation.
- 2) Flushing – flushing toward the work (repair) location from both directions is recommended and shall continue until discolored water is eliminated.
- 3) Slug Chlorination – where practical, the section of main shall be isolated, all service connections shut off, and the section chlorinated and flushed as follows:

Slug Chlorination Procedures:

- a. Place calcium hypochlorite granules/tablets in the main; completely fill the main to eliminate air pockets; expose the interior surfaces to a chlorine concentration of 100 mg/L for 3 hours; and then flush the slug of chlorinated water from the main. The slug of chlorinated water should be measured at regular intervals over the three hour period and should be restored to 100 mg/L free chlorine if at any time the residual drops below 50 mg/L.
 - b. The chlorine dose may be increased to 300 mg/L and the contact time reduced to 15 minutes. Conversely, the chlorine dose can be lowered to 50 mg/L and the contact time increased to 12 hours or the chlorine dose can be reduced to 25 mg/L and the contact time increased to 24 hours (maintain a concentration no less than 10 mg/L).
 - c. After the appropriate chlorination contact time, flushing shall be performed until the chlorine concentration in the water is no higher than typical chlorine residuals.
- 4) In the absence of performing Slug Chlorination, the following procedure should be implemented: Flush until the chlorine residual reaches normal operating levels or until a minimum of two volumes of the affected line is flushed, whichever is greater. If the water is not clear after the prescribed flushing, continue to flush until chlorine residual is restored and the water clears.

The volume of the affected water main can be calculated as follows: $\pi (3.14) \times \text{pipe diameter (in feet)}^2 \text{ divided by } 4, \text{ times the length of pipe (in feet)} \times 7.48 \text{ gal/cubic ft} = \text{volume in gallons}.$

Example: Calculated volume of 20 feet of 16 inch diameter water main equates to: $3.14 \times 1.33 \text{ feet (times } 1.33 \text{ feet) divided by } 4 = 1.39 \times 20 \times 7.48 = 208 \text{ gallons} \times 2 \text{ (minimum of two volumes)} = 416 \text{ gallons to be flushed through the affected main}.$

¹ The American Water Works Association has released a DVD entitled “Disinfection of Pipelines and Storage Facilities Field Guide,” No. 20619 that provides approved procedures for chlorine disinfection of all types of water mains and storage tanks. The guide provides step-by-step instructions, photos, and illustrations.

- 5) Bacteriological Testing – samples (customer taps preferably) shall be taken to determine the effectiveness of the disinfection procedures. Typically one sample is collected downstream of the main break or one on each end of the main break if flow direction is unknown. If a total coliform-positive sample occurs, daily sampling must continue until two consecutive total coliform-negative samples are recorded.
- 6) Repaired mains can be returned to service prior to the completion of the bacteriological testing in order to ensure fire protection/sanitary capabilities and to minimize the time customers are without water.

The delivered water should be controlled through the use of valves to limit delivery of water to those customers who were affected by the water main break and not opened to the whole system. This operating condition shall continue until receipt of acceptable water quality results.

In addition, it is required that the water system maintain in effect the precautionary boil water advisory, if issued, to the affected customers until receipt of acceptable water quality results.

De-chlorination Procedures

Repaired water mains that have been properly disinfected must be de-chlorinated before being put into service to protect the consumer. The discharge of highly chlorinated water flushed from the repaired main to a sanitary or storm sewer, or directly to a receiving stream, lake, etc or ground water is prohibited. Note: chlorinated water is highly toxic to many aquatic species.

Chlorine neutralization of highly chlorinated waters can be accomplished using chemical or non-chemical de-chlorination methods such as:

- 1) Vita-D-Chlor – Ascorbic Acid Tablets and appropriate de-chlorination device to ensure the proper dissolve rate based on water flow rate.
- 2) De-chlormats and De-chlorstrip can be used for de-chlorinating potable water that is discharging from a water main break and impacting sensitive receiving waters.

The American Water Works Association (<http://www.awwa.org/>) has released a DVD entitled “Water Main Disinfection and Dechlorination”, No. 64281 that addresses methods to remove excess chlorine from the water supply prior to putting the pipe into service and how to dispose of the highly chlorinated discharge.

APPENDIX D

COUNTY HEALTH AGENCY CONTACTS

County health agency contacts are also available at the following links:

<http://www.nj.gov/dep/enforcement/county.html>

<http://www.nj.gov/health/lh/documents/lhdirectory.pdf>

County Health Agency Contacts

County Health Agency	Phone Numbers	FAX Numbers
Atlantic County Division of Public Health	(609) 645-5971 x4373	(609) 645-5931
Bergen County Department of Health Services	(201) 634-2780	(201) 599-6270
Burlington County Health Department	(609) 265-5549	(609) 265-5541
Camden County Department of Health and Human Services	(856) 374-6037	(856) 374-6034
Cape May County Department of Health	(609) 465-1187	(609) 465-6564
Cumberland County Health Department	(856) 327-7095	(856) 327-6405
Essex County Health Department	(973) 497-9401	(973) 497-9407
Essex Regional Health Commission	(973) 251-2059	(973) 251-2779
Gloucester County Department of Health	(856) 218-4130	(856) 218-4109
Hudson Regional Health Commission	(201) 223-1133	(201) 223-0122
Hunterdon County Dept. of Public Safety Division of Public Health Services	(908) 788-1351	(908) 782-7510
Mercer Division of Public Health	(609) 278-7165	(609) 396-8014
Middlesex County Public Health Department	(732) 745-3123	(732) 745-3922
Monmouth County Health Department	(732) 431-7456	(732) 409-7579
Morris County Dept. of Law and Public Safety	(973) 631-5484	(973) 631-5490
Ocean County Health Department	(732) 341-9700 x7201	(732) 341-4467
Passaic County Health Department	(973) 881-4396	(973) 225-0222
Salem County Health Department	(856) 935-7510 x8609	(856) 935-8483
Somerset County Department of Health	(908) 231-7155	(908) 704-8042
Sussex County Department of Environmental and Public Health Services	(973) 579-0370	(973) 579-9719
Union County Office of Health Management	(908) 518-5620	(908) 654-9402
Warren County Health Department	(908) 475-7960	(908) 475-7964

APPENDIX E

GUIDELINES FOR A WATER MAIN BREAK ACTION PLAN

WATER MAIN BREAK LOG

GUIDELINES FOR A WATER MAIN BREAK ACTION PLAN

Recognizing that water main breaks are a common emergency encountered by water systems, the NJDEP recommends that each system develop an action plan for responding to water main breaks.

These Action Plans are to be maintained on-site and are subject to NJDEP review in accordance with N.J.A.C. 7:10A-1.12 et seq.

The Water Main Break Action Plan shall address the following:

- a. Notification procedures to local, county, state agencies;
- b. Notification procedures to affected customers and critical facilities/sensitive populations (establish method(s) to be used and timeframes);
- c. Emergency utility call-out procedures;
- d. Leak Detection procedures;
- e. Traffic control procedures;
- f. Shutdown procedures for isolating the damaged main;
- g. Protocol for selecting the appropriate repair method;
- h. Procedures for disinfecting, flushing, and testing the water main(s);
- i. Procedures for restoring water service and informing affected customers; and
- j. Recording water main break incidents and documenting the remedial/follow-up actions taken and water quality data.

CALENDER YEAR: _____

Water System: _____

PWSID #: _____

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APPENDIX F

Drinking Water Advisory Communication Toolbox

The Drinking Water Advisory Communication Toolbox project was a collaborative effort among the U.S. Centers for Disease Control and Prevention (CDC), the U.S. Environmental Protection Agency (EPA), the American Water Works Association (AWWA), the Association of State and Territorial Health Officials (ASTHO), the Association of State Drinking Water Administrators (ASDWA), and the National Environmental Health Association (NEHA).

The Toolbox provides information on how to plan for, develop, implement, and evaluate drinking water advisories. The approach presented recognizes the differences in scope, scale, and severity of situations that trigger advisories – a main break, a hurricane, a drop in pressure, or intentional contamination. These differences affect the types of tools, planning, and communication used by drinking water systems.

The Toolbox includes instructions on how to get prepared, what to do during an event, templates and tools to use during an event, and recommendations for follow-up actions and assessments. The purpose of the Toolbox is to enable water systems to communicate effectively with partners and the public in order to protect public health.

This document can be accessed online and printed from CDC's website at:

<http://www.cdc.gov/healthywater/emergency/drinkingwateradvisory.html>

Provided below is an excerpt of the Table of Contents from the Toolbox with highlights for emphasis of pertinent information for your planning efforts.

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